Development of Global Lakes &Reservoirs Repository (GLR) and their application for predicting estimating water quality changes in lakes and estuaries induced by global climate changes

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Global Lakes &Reservoirs Repository (GLR) was developed in order to promote better comprehension of the status of lakes &reservoirs on a global scale. Basic information for each lake is stored, together with the whole surface shape of each lake &reservoir. For some lakes, bathymetry data is stored, which enables three-dimensional numerical simulations using Biwa-3D. Using this, data three lakes (Lake Biwa, Lake Tahoe and Lake Toba) are calculated by their vertical mixing structure.
The whole database is used to apply basic parameters; it is also used with simpler ecological models in order to discuss potential impacts on lakes &reservoirs of global-scale climate change. Fluxes like continental hydrological fluxes from international rivers, associated with large-scale successive reservoirs, such as the La Plata river basin, are being estimated by combining GRL with continental-scale hydrological models.
The water quality of those lakes including ecological status is to be assumed by using satellite remote sensing. Only limited application is now applied into the reference lake.

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